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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Carlson, et al.

Art Unit : 2815

Serial No.: 09/547,061

Examiner : Lourdes Cruz

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Title : INSULATOR/METAL BONDING ISLAND FOR ACTIVE AREA SILVER  
EPOXY BONDING

Commissioner for Patents  
Washington, D.C. 20231

RESPONSE

Applicants respectfully request reconsideration of the application in view of the following comments, which are responsive to the October 10, 2001 Final Office Action and the February 11, 2002 Advisory Action.

Response to the Claim Rejections Under 35 U.S.C § 103

Claims 1-4 and 7-13 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,040,630 issued to Panchou, et al. The rejection asserts that Panchou allegedly teaches each element of the claims except for silver epoxy bonds, a photodetector, and an oxide containing island, which are allegedly well known in the art.

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The present invention is directed toward a semiconductor interconnection system having an insulating island configured to prevent the migration of a metal element from the bond to the contact. As seen in Figure 3, this is accomplished by placing the insulating island 324 between the bond containing the metal element 316 and the contact 306. Thus, any metallic element migrating from the bond is stopped by the island.

[None of the cited art teaches or suggests an island for preventing metallic migration.] The rejection asserts that item 30 of Panchou is an insulating island, and prevents cross contamination of silver from the bumps. [Applicant agrees with this characterization, but this is not what is claimed in the present application.] Claims 1 and 9 of the present invention require that the insulating island be configured "to prevent migration of silver/metalllic substance" [from the bond to the semiconductor die through the conductive contacts]. Thus, to read on the current claims, the insulating island (30 of Panchou) must prevent migration of silver/metalllic substance from the bonds (14 of Panchou) to the semiconductor die (substrate in Panchou) through the conductive contacts (38 of Panchou). The claims do not deal with cross contamination of the bonds to each other. Figure 4 and 4a of Panchou clearly shows the island 30 has vias for the bonds 14 to pass through.

This allows the bonds to sit directly on the conductive contacts 38. Thus, nothing is between the bonds 14 and the conductive contacts 38, and therefore silver/metallic migration to the semiconductor die may occur. Thus, the structure of the insulating island which prevents migration of the silver/metallic substance makes the present claims distinct from Panchou.

In view of the foregoing distinctions, Applicants respectfully submit that independent Claims 1 and 9 are patentably distinguished over the cited art. Applicants respectfully submit that Claims 1, and 9 are in condition for allowance, and Applicants respectfully request allowance of Claims 1 and 9.

Claims 2-4, 7-8, and 10-13 depend either directly or indirectly from one of the independent claims. Each dependent claim further defines the independent claim from which it depends. In view of the foregoing remarks regarding Claims 1 and 9, Applicants respectfully submit that Claims 2-4, 7-8, and 10-13 are likewise in condition for allowance. Applicants respectfully request allowance of dependent Claims 2-4, 7-8, and 10-13.

Allowable Subject Matter

Claims 5 and 6 are indicated to contain allowable subject matter if rewritten in independent form. In view of the foregoing remarks regarding the independent claims, Applicants respectfully submit that Claims 5 and 6 are now in condition for allowance. However, Applicant reserves the right to rewrite Claims 5 and 6 in independent form.

Summary

In view of the above amendments and remarks, all of the claims should be in condition for allowance. A formal notice to that effect is respectfully solicited.

Please apply any other charges or credits to Deposit Account No. 06-1050.

Respectfully submitted,

Date: 4/10/02



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